



IACS

International Association
of Cryospheric Sciences

<http://www.cryosphericciences.org>

2018 IACS annual report

This report covers the period from February 2018 to January 2019.

INTRODUCTION

The International Association for Cryospheric Sciences (IACS) is the Association of the International Union of Geodesy and Geophysics (IUGG) that is concerned with snow and ice science and which provides expert advice on cryospheric issues to governmental and non-governmental organisations. The objectives of IACS are to:

- Promote studies of cryospheric subsystems of the Earth and solar system.
- Encourage research in the above subjects by members of the cryospheric community, national and international institutions and programmes, and individual countries through collaboration and international co-ordination.
- Provide an opportunity on an international basis for discussion and publication of the results of the above research.
- Promote education and public awareness on the cryosphere, and facilitate the standardisation of measurement or collection of data on cryospheric systems and of the analysis, archiving and publication of such data.

ADMINISTRATION

A Bureau of 11 elected officers manages the business of IACS. The current IACS Bureau was elected at the IACS Plenary Administrative Meeting during the 26th IUGG General Assembly in Prague. It consists of *Regine Hock* (President), *Charles Fierz* (Immediate Past President), *Andrew Mackintosh* (Secretary General), *Stanislav Kutuzov* (Vice President, replaced Olga Solomina in May 2018), *Cunde Xiao* (Vice President), *Ian Allison* (Vice President), *Hiroyuki Enomoto* (Head, Sea Ice, Lake and River Ice), *Christine Schott Hvidberg* (Head, Planetary and other ices of the solar system), *Liss Marie Andreassen* (Head, Glaciers and Ice Sheets), *Ethan Greene* (Head, Snow and Avalanches), *Valérie Masson Delmotte* (Head, Cryosphere, Atmosphere and Climate), and *Anaïs Orsi* (Deputy Head, Cryosphere, Atmosphere and Climate).

To run the 'daily' business, the IACS Executive Committee (EC) consisting of President, Secretary General and Immediate Past President/President Elect holds regularly teleconferences, in which all Bureau members are welcome to join.

ACTIVITIES

IACS Individual Membership

In 2017, IACS established free individual membership. We now have 500 members, who have signed up in under two years. We hope that individual membership is helping to create a stronger community around IACS, promoting its activities and its relationship with IUGG and its other seven constituent associations. Specifically, IACS members receive regular information about IACS activities and opportunities, and are eligible to engage in IACS activities and bodies. This includes the possibility of receiving IACS sponsorship and financial support for workshops, training schools, and other IACS-sponsored activities, as well as for the IACS early-career scientist prize (if members qualify). More information about IACS membership can be found [here](#). Everybody is welcome to join, including members of other IUGG associations.

New IACS website, Twitter account, and home for our archives

In early 2019, IACS launched a completely redesigned website <https://cryosphericciences.org>, culminating from months of work. Hosted by the World Glacier Monitoring Service in Zurich, the new website is both more functional, modern and aesthetically pleasing, and we invite you to explore it. The website also displays IACS Twitter feed, from the IACS Twitter handle launched in September 2017. See <https://twitter.com/iacsryo>. Together, the website and twitter presence are helping to connect IACS to a larger community of engaged scholars and the public.

IACS archival documents were also recently moved from the National Snow and Ice Data Center in Boulder, Colorado, to their new home at the World Glacier Monitoring Service in Zurich, Switzerland (who are also now hosting our website).

IACS Bureau Meeting, and POLAR2018 conference

The IACS bureau held its annual bureau meeting in Davos, Switzerland, during the POLAR2018 conference in July 2018. The bureau meeting was held over two days, and was attended in person by 4 bureau members, and via video link by a further four members including the President and Secretary General. The meeting ran remarkably well in this format and we intend to mimic it in later meetings, to better accommodate people's busy work schedules, home responsibilities, and to minimise greenhouse-gas impacts associated with air travel.

IACS bureau members working on Intergovernmental Panel on Climate Change report

In 2018, a team of six IACS officers, present and past, have been writing the Intergovernmental Panel on Climate Change Special Report on the Oceans and Cryosphere in a Changing Climate. IACS officers attended two Lead Author meetings (in Quito, Ecuador and Lanzhou, China), and spent several intense months writing the report as part of the larger international team. The roles that IACS officers have played are as follows; IACS Head of Division IV Valerie Masson Delmotte is Co-Chair of IPCC Working Group I. IACS President Regine Hock is Coordinating Lead Author of Chapter 2 'High Mountain Regions'. IACS Secretary General Andrew Mackintosh is Lead Author of Chapter 3 'Polar Regions'. IACS Division III head Hiroyuki Enomoto is Lead Author of Chapter 1 'Framing and Context of the Report'. IACS Vice President Xiao Cunde is Review Editor for Chapter 3 'Polar

Regions'. Former IACS President Georg Kaser is Review Editor for Chapter 2 'High Mountain Regions'.

Working and Standing Groups

IACS facilitates the transfer of research methods and explores new avenues in cryospheric science through Standing Groups and Working Groups devoted to a theme or subject and composed of experts in the particular field of study. The currently active Working Groups (WG) of IACS are the *Randolph Glacier Inventory and Infrastructure for Glacier Monitoring Working Group* (2014-2019), the *Glacier Ice Thickness Estimation Working Group* (2014-2019) and the *Debris Covered Glaciers Working Group* (2018-2022). More information on all of our Working Groups can be found [here](#).

- The Randolph group was the first to provide a globally comprehensive glacier inventory; in 2017, it released version 6.0 of its database (<https://doi.org/10.7265/N5-RGI-60>). The inclusion of Randolph Inventory data into the GLIMS (Global Land Ice Measurements from Space) database is now complete, and the working group collaborates closely with the World Glacier Monitoring Service (WGMS; an IACS Service).
- The IACS Working Group on Glacier ice thickness has been extremely successful, and has just had its second scientific output published in the leading journal [Nature Geoscience](#).
- The debris cover working group was established in late 2018. Many global mountain ranges currently support debris-covered glaciers, and the proportion of the glacierized surface that is debris covered is expected to increase under future climate change. The overarching aim of the debris-covered glaciers working group is to advance our understanding of how debris impacts glacier response to climate at the local, regional, and global scale. This is a necessary precursor to accurately represent debris-covered glaciers in models of regional runoff and sea-level change projections.

The current Standing Groups (SG) are the *Joint Commission on Volcano-Ice Interactions* (with the International Association of Volcanology and Chemistry of the Earth's Interior - IAVCEI), *Glacier and Permafrost Hazards in Mountains* ([GAPHAZ](#), a joint SG with the International Permafrost Association IPA), and the *Steering Committee of the Global Terrestrial Network for Glaciers* (GTN-G). GAPHAZ also links IACS to the IUGG Union Commission on GeoRisk (M. Krautblatter is our representative). For a recent high-profile GAPHAZ output, please see their 2018 [Nature Geoscience paper](#) about a catastrophic glacier collapse in Tibet.

Meetings and symposia

IACS supports events that are of interest to the cryospheric community. Our contributions are either to cover part of the travel costs of attendees (early career scientists and scientists from developing countries) or towards IACS awards for scientists in these categories. Recent sponsorships are listed below:

- *From Entering the Field to Taking the Helm; Perspectives of Women in Polar Research*. Panel Discussion at Polar2018 Meeting in Davos (15-26 June 2018). The panel discussion involved > 300 participants from 32 countries.
- *International Summer School in Glaciology*. IACS (along with IUGG) supported this summer school held in the small Alaskan village of McCarthy from June 5-15, 2018. The summer school was convened by IACS President Regine Hock, and included nearly 30 students from 25 universities and more than a dozen countries including Nepal, India, Peru and New Zealand.
- *International Workshop on Cryospheric Changes and their Regional and Global Impacts*, Dunhuang China, from July 31st to August 1st, attended by more than 200 scientists from around the world. IACS supported the early-career scientist prizes.
- *4th Nordic Workshop on Cosmogenic Nuclides*, 4-6 June 2018; Landscape development and geohazards. IACS supported participation by early-career scientists.
- *4th Snow Science Winter School* at Col du Lautaret, France, from 11-17 February 2018. IACS supported an early-career scientist to attend.

IACS early career scientist award

- These prizes will be presented at bi-annual scientific assemblies (IACS, and IUGG General Assemblies). Information about the 2016 awardees can be found [here](#). The next round of awards will be made in time for the 2019 Montreal IUGG General Assembly (deadline March 1st, 2019).

FUTURE ACTIVITIES AND ANNOUNCEMENTS

27th IUGG General Assembly, Montreal

IACS is looking forward to participating in the GA in Montreal, where we will support around 30 cryosphere-related symposia including many joint with other IUGG associations. All IACS bureau positions (except for President) will be renewed, we will hold the IACS dinner known as *Festa Cryospherica*, and the winner of the IACS Early Career prize will be announced.

IACS have began planning for a joint meeting with IAMAS and IAPSO (MOCA-21) to be held in the Northern Hemisphere summer of 2021 in Busan, South Korea.

New Working Groups

We are currently looking to develop new Working Groups within IACS, particularly in Division I (Snow and Avalanches), Division III (Sea Ice, Lake and River Ice) Division IV (Cryosphere, Atmosphere and Climate) and Division V (Planetary and other Ices of the Solar System). IUGG Montreal will provide an opportunity for IACS Bureau members to develop new working group ideas within our community.

IACS sponsorship of forthcoming meetings

- ALERT Conference 2019 in Aussois, France (Workshop "Computational Methods in Snow and Avalanche Release Mechanics". IACS will support attendance by two early career researchers.